

## Studies on Parasitic Mites of New Jersey<sup>1</sup>

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**Abstract:** A study of mites of the Trombiculidae, Myobiidae, Pyemotidae, Tetranychidae, and Acarinae collected from mammals in New Jersey included 26 recognized species and 3 probable new species. New records for the state and host and date-locality records are included.

### INTRODUCTION

In view of the scarcity of New Jersey ectoparasite records, a survey was undertaken from 1951 to 1953 by the New Jersey Agricultural Experiment Station with cooperation from the New Jersey Department of Agriculture, and the New Jersey Division of Fish and Game. During this survey, about 4,000 mammals of twenty-nine species were collected.

This paper summarizes information on the Trombiculidae, Myobiidae, Pyemotidae, Tetranychidae, and Acarinae which were taken from mammals and are new collection and/or host records for New Jersey.

Most of the small mammals other than rats were collected with Sherman live traps or snap mousetraps. Rats were usually collected from municipal dumps by use of cyanide gas. All mites were mounted in Hoyer's medium.

### RESULTS

New records for the state are listed below together with information on hosts and comments on species where warranted. In the records abbreviations are as follows: L indicates larva, N indicates nymph, T indicates tritonymph, F indicates female, and M indicates male. Specimens without letter designations are adults. Numbers appearing after the word "plus" indicate specimens not mounted and not identified by the author, but which were thought at the time of mounting to be identical with those mounted. All mites of the same species found on the same day on the same host species in the same locality are dealt with as one record.

### TROMBICULIDAE

Wharton and Fuller (1952) summarize much general information pertaining to the biology and ecology of chiggers. They also present keys to genera, and list all species and all references. Brennan and Jones (1959) present keys including all North American species of chiggers.

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TABLE 1. Mites and hosts found in the present study.

	<i>Didelphis virginiana</i>	<i>Blarina brevicauda</i>	<i>Clethrionomys gapperi</i>	<i>Microtus pennsylvanicus</i>	<i>Peromyscus leucopus</i>	<i>Pitymys pinetorum</i>	<i>Mus musculus</i>	<i>Rattus norvegicus</i>	<i>Marmota monax</i>
<i>Leptotrombidium myotis</i>					2	1*			
<i>Miyatrombicula cynos</i>								1*	
<i>Neotrombicula whartoni</i>	20*			11		3*		1*	
<i>Euschongastia peromysci</i>			9	6	41	6		1*	
<i>Euschongastia marmotae</i>									23
<i>Euschongastia blarinae</i>		5							
<i>Euschongastia setosa</i>					1				
<i>Protomyobia claparedei</i>		1		1*					
<i>Blarinobia simplex</i>		88					1*		
<i>Radfordia subuliger</i>					1*				
<i>Radfordia lemnina</i>				2		3*			
<i>Radfordia affinis</i>							7		
<i>Radfordia ensifera</i>		1*		3*		5*	1*	7716	
<i>Myobia musculi</i>							1		
<i>Bryobia praetiosa</i>	4	2*		1*		1*		3*	
<i>Pygmephorus erlangensis</i>		8*						554*	
<i>Pygmephorus</i> sp.		1*						569*	
<i>Pygmephorus</i> sp.						5*			
<i>Pediculaster mesembrinae</i>								1*	
<i>Pseudopygmephorus sellnicki</i>								26*	
<i>Pseudopygmephorus tarsalis</i>								3*	
<i>Neopygmephorus bavaricus</i>		2*				11*		2*	
<i>Neopygmephorus lithobii</i>				1*					
<i>Neopygmephorus</i> sp.		1*		18*		159*			
<i>Acarus siro</i>								73	
<i>Acarus immobilis</i>								5*	
<i>Tyrophagus similis</i>								1*	
<i>Tyrophagus palmarum</i>								2*	
<i>Tyrophagus putrescentiae</i>								38	
Total hosts examined	13	88	2	152	156	146	44	2795	3

\* No previous records on this host.

Keys including all species of the *Neotrombicula*, detailed descriptions, and many diagrams, are presented by Brennan and Wharton (1950). Complete records of United States *Neotrombicula* are also presented.

The most important work dealing with the genus *Euschongastia* is that of Farrell (1956) which includes a key to species, complete descriptions and much ecological information.

*Leptotrombidium myotis* (Ewing)

Seabrook, 22 Sept. 52, ex *Peromyscus leucopus*, 2L; Seabrook, 22 Sept. 52, ex *Pitymys pinetorum*, 1L.

*Miyatrombicula cynos* (Ewing)

Vernon, 7 Feb. 52, ex *Rattus norvegicus*, 1L.

*Neotrombicula whartoni* (Ewing)

Eldora, 9 Apr. 53, ex *Pitymys pinetorum*, 1L; Moorestown, 18 Mar. 53, ex *Pitymys pinetorum*, 1L; Riverton, 21 Apr. 53, ex *Pitymys pinetorum*, 1L; Barnegat, 19 Nov. 53; ex *Microtus pennsylvanicus*, 10L; Clayton, 16 Dec. 52, ex *Microtus pennsylvanicus*, 1L; Clinton, 29 Oct. 51, ex *Didelphis virginiana*, 20L; Riverton, 15 Feb. 52, ex *Rattus norvegicus*, 1L.

*Euschongastia peromysci* (Ewing)

Bamber, 10 Nov. 53, ex *Peromyscus leucopus*, 4L; Monroeville, 13 Feb. 53, ex *Peromyscus leucopus*, 2L; New Brunswick, 4 Feb. 53, ex *Peromyscus leucopus*, 1L; New Brunswick, 9 Mar. 53, ex *Peromyscus leucopus*, 7L; New Brunswick, 10 Mar. 53, ex *Peromyscus leucopus*, 3L; New Brunswick, 23 Mar. 53, ex *Peromyscus leucopus*, 1L; Seabrook, 22 Sept. 52, ex *Peromyscus leucopus*, 23L; Clayton, 16 Dec. 53, ex *Pitymys pinetorum*, 1L; Lakehurst, 12 May 53, ex *Pitymys pinetorum*, 1L; New Brunswick, 4 Feb. 53, ex *Pitymys pinetorum*, 1L; Seabrook, 22 Sept. 52, ex *Pitymys pinetorum*, 3L; Chester, 17 Dec. 52, ex *Microtus pennsylvanicus*, 1L; Clayton, 16 Dec. 52, ex *Microtus pennsylvanicus*, 1L; New Brunswick, 5 Feb. 53, ex *Microtus pennsylvanicus*, 4L; Seabrook, 22 Sept. 52, ex *Clethrionomys gapperi*, 9L; Pedricktown, 10 Mar. 52, ex *Rattus norvegicus*, 1L.

*Euschongastia marmotae* Farrell

Clinton, 1 Oct. 51, ex *Marmota monax*, 23L.

*Euschongastia blarinae* (Ewing)

Clinton, 30 Sept. 51, ex *Blarina brevicauda*, 5L.

*Euschongastia setosa* (Ewing)

Seabrook, 22 Sept. 52, ex *Peromyscus leucopus*, 1L.

## MYOBIIDAE

Ewing (1938) described all known North American Myobiidae, and included host, date, and locality records. Jameson (1955) taxonomically and ecologically summarized the genera of the Myobiidae. A key to genera is presented, as well as phylogentic relationships of genera. With respect to *Radfordia*, an excellent key is presented by Howell and Elzinga (1962).

*Protomyobia claparedei* (Poppe)

High Bridge, 11 Feb. 53, ex *Blarina brevicauda*, 1F; Barnegat, 19 Nov. 53, ex *Microtus pennsylvanicus*, 1F.

*Blarinobia simplex* (Ewing)

Allentown, 20 Jan. 53, ex *Blarina brevicauda*, 1F plus 60; Clinton, 30 Sept. 53, ex *Blarina brevicauda*, 3F; Eldora, 10 Apr. 53, ex *Blarina brevicauda*, 2F; Port Republic, 16 Apr. 53, ex *Blarina brevicauda*, 1F plus 8; Riverton, 21 Apr. 53, ex *Blarina brevicauda*, 3F plus 4; Robinsville, 15 Jan. 53, ex *Blarina brevicauda*, 1F; Somerset County, 5 Apr. 52, ex *Blarina brevicauda*, 1F, 2FN; Trenton, 21 Apr. 53, ex *Blarina brevicauda*, 1F; Yardville, 30 Nov. 53, ex *Blarina brevicauda*, 1F; Trenton, 22 Jan. 53, ex *Mus musculus*, 1F.

*Radfordia subuliger* Ewing

New Brunswick, 3 Feb. 53, ex *Peromyscus leucopus*, 1F.

*Radfordia lemnina* (Koch)

Princeton, 22 Jan. 53, ex *Microtus pennsylvanicus*, 1M; Morris County, 6 Feb. 53, ex *Microtus pennsylvanicus*, 1F; Seabrook, 15 Dec. 52, ex *Pitymys pinetorum*, 1F plus 1; Clayton, 16 Dec. 52, ex *Pitymys pinetorum*, 1M.

*Radfordia affinis* (Poppe)

Trenton, 24 Jan. 53, ex *Mus musculus*, 1F plus 5; Trenton, 26 Jan. 53, ex *Mus musculus*, 1F.

*Radfordia ensifera* (Poppe)

Bridgeton, 19 Dec. 52, ex *Pitymys pinetorum*, 1F; Robbinsville, 14 Jan. 53, ex *Pitymys pinetorum*, 1F; Vincentown, 23 Jan. 53, ex *Pitymys pinetorum*, 2M, 1F; Fortescue, 20 Jan. 53, ex *Blarina brevicauda*, 1M; Princeton, 22 Jan. 53, ex *Microtus pennsylvanicus*, 1M plus 2; Princeton, 22 Jan. 53, ex *Mus musculus*, 1M.

Over 7,000 *Radfordia ensifera* were collected from *Rattus norvegicus*. The localities of these collections are presented in Figure 1.

*Radfordia ensifera* is common on New Jersey rats; 34% of those examined were found to possess *Radfordia ensifera*. The per cent infestation appeared to be constant throughout the year, although the average number of mites per infested rat was not. An average of 8.1 specimens of *Radfordia ensifera* was found per infested rat. No significant difference was found between the average number of *Radfordia ensifera* per rat in the various sections of New Jersey.

*Radfordia ensifera* may be found on New Jersey rats throughout the year. The seasonal fluctuations are the same throughout the state. In summer this myobiid is about two and one-half times as abundant as during the rest of the year.

*Myobia musculi* Schrank

Trenton, 9 Feb. 53, ex *Mus musculus*, 1F.

## PYEMOTIDAE

Cross (1962) deals with many pyemotids found throughout the country. Krczal (1959) describes many new European pyemotids.

*Pediculaster mesembrinae* (Canestrini)

Woodbury, 27 Aug. 52, ex *Rattus norvegicus*, 1F.

*Pygmephorus erlangensis* Krczal

Dividing Creek, 15 Jan. 53, ex *Blarina brevicauda*, 1F; Franklin Township, 5 Apr. 52, ex *Blarina brevicauda*, 2F; Robbinsville, 15 Jan. 53, ex *Blarina brevicauda*, 1F plus 1; Yardville, 29 Nov. 53, ex *Blarina brevicauda*, 1F plus 2.

The following records are all ex *Rattus norvegicus*:

Atlantic City, 6 Feb. 52, 2F plus 94; Audubon, 1 Feb. 52, 1F; Barrington, 4 Feb. 52, 2F; Bernardsville, 7 Dec. 51, 1F; Bloomingdale, 16 May 52, 1F; Bridgeton, 11 Feb. 52, 1F; Burlington, 28 Feb. 52, 3F plus 12; Cranbury, 7 Apr. 52, 7F plus 26; Elizabeth, 30 Jan. 52, 2F plus 14; Fairview, 9 May 52, 1F plus 8; 11 Aug. 52, 1F plus 18; Flemington, 10 Dec. 51, 3F; Gibbstown, 12 Mar. 52, 2F plus 13; Hackensack, 20 May 51, 1F; Hacketts-town, 26 Mar. 52, 4F; Hightstown, 21 Apr. 52, 6F plus 7; Jersey City, 14 Nov. 51, 1F; 25 Feb. 52, 6F plus 9; 28 Feb. 52, 3F plus 12; Lyndhurst, 8 May 52, 1F plus 73; McAfee, 7 Feb. 52, 2F; 13 Feb. 52, 2F; National Park, 2 Apr. 52, 1F; Newark, 28 Feb. 52, 1F; North Arlington, 25 Feb. 52, 2F plus 7; Palmyra, 27 Mar. 52, 2F plus 1; Pedricktown, 10 Mar. 52, 4F plus 16; Pennsauken Township, 26 Feb. 52, 3F plus 12; Pennsgrove, 6 Mar. 52, 2F plus 10; Perth Amboy, 20 May 51, 2F; 16 Mar. 52, 4F plus 2; Phillipsburg, 21 Mar. 52, 2F plus 7; Pine Brook, 9 June 52, 2F; Rahway, 8 Jan. 52, 1F; 30 Jan. 52, 1F; 23 Apr. 52, 2F; Raritan, 6 Dec. 51, 1F plus 19; 15 May 52, 1F; Riverside, 27 Feb. 52, 1F; 28 Mar. 52, 4F plus 2; Riverton, 15 Feb. 52, 3F plus 3; Roebbing, 28 Feb. 52, 1F plus 7; Rutherford, 13 June 52, 5F plus 6; Salem, 30 Nov. 51, 2F; 5 Mar. 52, 1F; Seabrook, 7 Feb. 52, 6F plus 5; Secaucus, 26 Feb. 52, 2F; South Camden, 14 Mar. 52, 3F plus 7; South

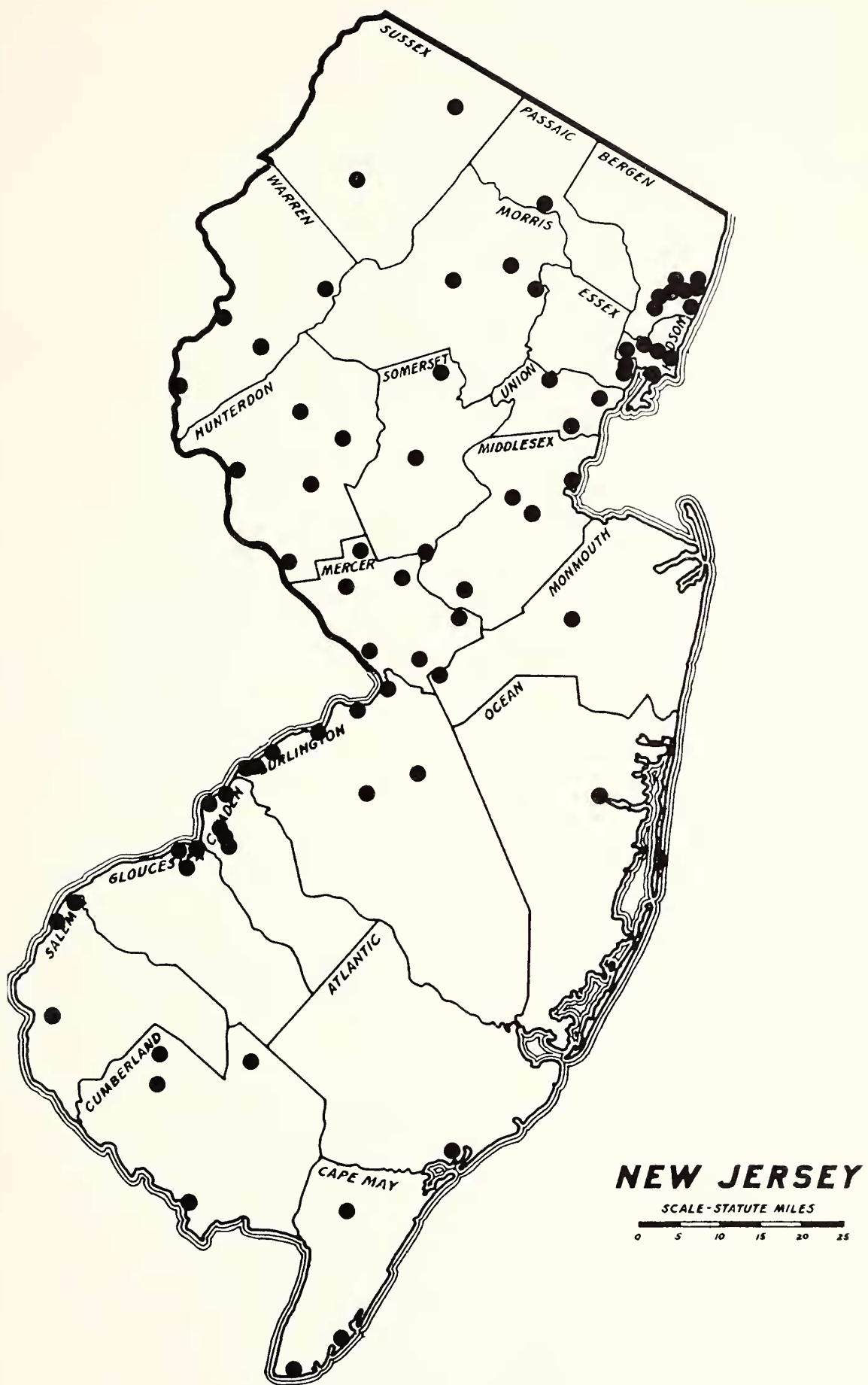


FIG. 1. Distribution of *Radfordia ensifera*.

River, 27 Feb. 52, 4F plus 12; 22 Apr. 52, 1F; Trenton, 20 Feb. 52, 4F plus 7; Union City, 31 Aug. 51, 2F; Westville, 5 Feb. 52, 4F plus 3; Wildwood, 20 Feb. 52, 1F plus 8; Woodbury, 15 Feb. 52, 5F plus 14.

*Pygmephorus erlangensis* was found throughout the year, being most abundant during winter and early spring.

*Pygmephorus* sp.

Eldora, 10 Apr. 53, ex *Blarina brevicauda* (dead), 1F.

The following records are all ex *Rattus norvegicus*:

Allentown, 20 Aug. 52, 1F; Belvidere, 13 May 52, 1F plus 12; Cranbury, 7 Apr. 52, 3F plus 7; Fairview, 28 Aug. 51, 2F; Hackensack, 20 May 51, 2F plus 1; North Arlington, 25 Feb. 52, 3F plus 6; Phillipsburg, 21 Mar. 52, 1F; Rahway, 23 Apr. 52, 3F plus 5; Raritan, 15 May 52, 1F plus 3; Riverside, 27 Feb. 52, 2F; Riverton, 15 Feb. 52, 1F; Secaucus, 19 Feb. 52, 2F; 26 Feb. 52, 1F; 7 May 52, 2F plus 483; Somers Point, 13 Feb. 52, 1F; South River, 22 Apr. 52, 1F plus 5; Trenton, 20 Feb. 52, 1F; Union City, 6 May 52, 1F plus 10; Woodbury, 15 Feb. 52, 1F plus 7.

This species is similar to *Pygmephorus* sp. of Cross (1962) as well as to *Pygmephorus spinosus* Kramer. It differs from the former in the following respects: (1) The caudal setae are only about half as long as in the diagram of Cross. (2) The lengths of dorsal setae I and II relative to the length of the hysterosome are similar to those of *Pygmephorus spinosus*. (3) The lateral setae I are but slightly longer than dorsal setae I. (4) The stigmatal setae of the propodosoma are about twice as long as in the diagram of Cross. (5) The distance between the base of a stigmatal setae and the base of the anterior pseudostigmatal seta on the same side is about two-thirds as great as the distance between the base of the anterior pseudostigmatal seta and the base of the posterior pseudostigmatal seta on the same side.

No intermediates between *Pygmephorus erlangensis* and the undescribed *Pygmephorus* sp. were found. This *Pygmephorus* sp. differs from *Pygmephorus erlangensis* in the following respects: (1) Stigmatal setae are only about sixty percent as long as those of *Pygmephorus erlangensis*. (2) External ventral setae II barely reach the bases of the internal presternal setae, whereas in *Pygmephorus erlangensis* they almost reach the bases of the external presternal setae. (3) All three pairs of caudal setae are the same length, whereas in *Pygmephorus erlangensis* the most lateral pair is slightly more than twice as long as the others. (4) The distance between internal caudal setae and external caudal setae I is only one-half as great as the distance between external caudal setae I and external caudal setae II, whereas in *Pygmephorus erlangensis* the two distances are equal.

The specimen taken from *Blarina brevicauda*, the same host with which Cross's specimen was associated, differs slightly from the others and may be another species. In this specimen the relative lengths of lateral setae I and dorsal setae I are as diagrammed by Cross. However, the other differences noted above remain.

*Pygmephorus* sp.

Fellowship, 22 Jan. 53, ex *Pitymys pinetorum*, 3F (questionable record); Jamesburg, 14 Nov. 52, ex *Pitymys pinetorum*, 1F; New Brunswick, 4 Feb. 53, ex *Pitymys pinetorum*, 1F.

This species is somewhat similar to *Pygmephorus microti* Krczal, known only from Europe on *Microtus arvalis* and *Sorex araneus*. *Pygmephorus* sp. differs from *Pygmephorus microti* in the following respects: (1) The bases of lateral setae III are slightly anterior to the bases of dorsal setae III. (2) The caudal setae are almost as wide as the dorsal setae. (3) The external caudal setae II are about half as long as the dorsal setae IV. (4) The external caudal setae I are about half as long as the external caudal setae II. (5) The internal caudal setae are about two-thirds as long as the external caudal setae I.

*Pseudopygmephorus sellnicki* (Krczal)

Dover, 28 May 52, ex *Rattus norvegicus*, 1F; Jersey City, 8 July 52, ex *Rattus norvegicus*, 1F; Kearny, 8 July 52, ex *Rattus norvegicus*, 1F; Lyndhurst, 12 June 51, ex *Rattus norvegicus*, 1F; New Brunswick, 23 Apr. 51, ex *Rattus norvegicus*, 1F; Perth Amboy, 20 May 51, ex *Rattus norvegicus*, 2F; Rahway, 12 June 51, ex *Rattus norvegicus*, 1F; Rahway, 5 July 51, ex *Rattus norvegicus*, 1F; Union City, 7 Aug. 52, ex *Rattus norvegicus*, 1F plus 15; Woodbury, 27 Aug. 52, ex *Rattus norvegicus*, 1F.

*Pseudopygmephorus tarsalis* (Hirst)

Kearny, 8 July 52, ex *Rattus norvegicus*, 1F; Lyndhurst, 21 June 51, ex *Rattus norvegicus*, 1F; Perth Amboy, 10 Sept. 51, ex *Rattus norvegicus*, 1F.

*Neopygmephorus bavaricus* (Krczal)

Clayton, 16 Dec. 52, ex *Pitymys pinetorum*, 1F; Haddonfield, 22 Jan. 53, ex *Pitymys pinetorum*, 1F; Jamesburg, 12 Nov. 52, ex *Pitymys pinetorum*, 1F; Jamesburg, 14 Nov. 52, ex *Pitymys pinetorum*, 1F; Riverton, 21 Apr. 53, ex *Pitymys pinetorum*, 1F plus 1; Vincentown, 23 Jan. 53, ex *Pitymys pinetorum*, 2F plus 3; Bridgeton, 22 Apr. 52, ex *Rattus norvegicus*, 1F; South Camden, 14 Mar. 52, ex *Rattus norvegicus*, 1F; Franklin Township, 5 Apr. 52, ex *Blarina brevicauda*, 2F.

*Neopygmephorus lithobii* (Krczal)

Seabrook, 22 Sept. 52, ex *Peromyscus leucopus*, 1F.

*Neopygmephorus* sp.

Clayton, 16 Dec. 52, ex *Pitymys pinetorum*, 1F plus 1; Glassboro, 17 Dec. 52, ex *Pitymys pinetorum*, 1F plus 2; Haddonfield, 22 Jan. 53, ex *Pitymys pinetorum*, 2F; Jamesburg, 14 Nov. 52, ex *Pitymys pinetorum*, 2F; Manalapan, 23 Apr. 53, ex *Pitymys pinetorum*, 1F; Penns Neck, 24 Apr. 53, ex *Pitymys pinetorum*, 1F plus 1; Princeton, 9 Feb. 53, ex *Pitymys pinetorum*, 3F plus 1; Seabrook, 15 Dec. 52, ex *Pitymys pinetorum*, 3F plus 7; Seabrook, 18 Dec. 52, ex *Pitymys pinetorum*, 9F plus 85; Vincentown, 23 Jan. 53, ex *Pitymys pinetorum*, 13F plus 27; Dividing Creek, 15 Jan. 53, ex *Microtus pennsylvanicus*, 1F plus 1; Jamesburg, 12 Nov. 53, ex *Microtus pennsylvanicus*, 1F plus 12; Princeton, 20 Feb. 53, ex *Microtus pennsylvanicus*, 1F plus 1; Robbinsville, 16 Jan. 53, ex *Microtus pennsylvanicus*, 1F; Flemington, 21 Jan. 53, ex *Blarina brevicauda*, 1F.

In most respects, the present specimens resemble the *Neopygmephorus* sp. found in a rodent cache and diagrammed by Cross (1962). However, the present species differs from that diagrammed by Cross in that lateral setae IV are longer than dorsal setae IV by about an eighth, and the presternal and posternal setae have relative lengths and positions resembling those of *Neopygmephorus blumentritti* (Krczal).

## TETRANYCHIDAE

This family is entirely phytophagous, and its presence on mammals found during the ectoparasite survey is believed accidental.

*Bryobia praetiosa* Koch

Passaic County, 10 Feb. 53, ex *Blarina brevicauda* (dead), 1F; Somerville, 22 Apr. 53, ex *Blarina brevicauda* (dead), 1F; Clinton, 29 Oct. 51, ex *Didelphis virginiana*, 4F; Flemington, 9 Oct. 51, ex *Rattus norvegicus*, 3F; Camden County, 22 Jan. 53, ex *Microtus pennsylvanicus* (dead), 1F; Vincentown, 23 Jan. 53, ex *Pitymys pinetorum* (dead).

## ACARINAE

The Acarinae, a subfamily of Acaridae, are not parasitic but specimens were taken from some mammals.

*Acarus siro* L.

Belvidere (feed mill), 1 Feb. 52, ex *Rattus norvegicus*, 1F; Elizabeth (feed company), 30 Jan. 52, ex *Rattus norvegicus*, 2M, 4F; North Brunswick (farm), 29 Apr. 52, ex *Rattus norvegicus*, 1F; Springfield (farm supply store), 30 Jan. 52, ex *Rattus norvegicus*, 13M, 22F; Vineland (warehouse), 10 Jan. 52, ex *Rattus norvegicus*, 2M, 3F plus 10; Vineland (warehouse), 11 Jan. 52, ex *Rattus norvegicus*, 1M, 3F plus 11.

*Acarus siro* feeds on dry farinaceous products (Hughes, 1961). All the above records are from places where such products probably occurred.

*Acarus immobilis* (Griffiths)

Flemington, 4 Jan. 52, ex *Rattus norvegicus*, 1F; Long Branch, 21 Aug. 52, ex *Rattus norvegicus*, 1F; Westville, 5 Feb. 52, ex *Rattus norvegicus*, 1F plus 2.

*Tyrophagus similis* (Volgin)

Secaucus, 26 Feb. 52, ex *Rattus norvegicus*, 1F.

*Tyrophagus palmarum* Oudemans

Salem, 29 Nov. 51, ex *Rattus norvegicus*, 1F; Seabrook, 7 Feb. 52, ex *Rattus norvegicus*, 1F.

*Tyrophagus putrescentiae* (Schrank)

All records below are ex *Rattus norvegicus*:

Atlantic City, 30 Jan. 52, 1FT; Bernardsville, 13 Aug. 52, 2F; Bloomingdale, 6 Sept. 51, 1F, 1M; 5 Sept. 52, 1F; Flemington, 15 Aug. 52, 1F; Hightstown, 19 Aug. 52, 1F, 1M; Jersey City, 19 Dec. 51, 1M, 2F; 6 Aug. 52, 1F; Long Branch, 23 July 52, 3F; Newark, 3 June 52, 1M; Newton, 7 Feb. 52, 1M, 3F; North Arlington, 20 Nov. 51, 1F; Palisades Park, 2 Aug. 51, 1F; 7 Aug. 51, 1F, 1FT, plus 1; 22 Aug. 51, 1M, 1F, plus 1; 30 Aug. 51, 1F; Perth Amboy, 10 Sept. 51, 1F; Phillipsburg, 18 Aug. 52, 1FT; Rahway, 25 July 51, 1F; 4 Sept. 51, 1M, 1FT; 30 Jan. 52, 2F; Woodbury, 27 Aug. 52, 1F.

Table 1 summarizes the present study, listing the species found, the hosts, and the number found on each host.

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